LPS Build 3 Requirements Review

October 15, 1996

Agenda

- **Goal: Identify functionality for Build 3**
  - **Existing requirements**
  - **Open Issues - plan for resolution by Build 3 Design Review**
- **Requirements**
- **Summary of Post-DDS Functionality**
- **RIDs**
- **Open Issues**
  - **Preliminary Design**
  - **Detailed Design**
  - **Others**
- **CCRs**
- **ICCRs**

Requirements – Database

Functional Requirements

- **Add two byte ETM+ fill pattern**

Performance Requirements

- **Indexing**
- **Fine Tuning**
- **Performance optimization**

Globals

Functional Requirements

- **Enhance shared memory routines**

Performance Requirements

- **None**

IDPS

Functional Requirements

- **Automatic cloud cover assessment**
- **Browse file generation**
- **Moving window display**
- **Report browse/ACCA metadata**
- **Use parameters from database.**

Performance Requirements

- **See handout**

LDTS

Functional Requirements

- **Delete output files**
- **Generate file transfer summary report**
- **Retain output files**
- **Suspend DAN transfer**
- **Transmit suspended DANs**
- **(Re)transmit DANs**
- **Timeout on DDN receipt.**

Performance Requirements

- **See handout**

MACS

Functional Requirements

- **Additional startup/shutdown**
- **Automatic data capture**
- **Control DAN transfer**
- **View/edit contact schedule**
- **View/edit LPS configuration**
- **View/edit L0R parameters**
- **View/edit L0R thresholds**
- **Automatic data capture enable/disable**

Performance Requirements

- **See handout**

Other Open Issues

MFPS

Functional Requirements

Error thresholds

Use two byte fill pattern

Performance Requirements

- **See handout**

Other Open Issues

PCDS

Functional Requirements

- **Compute & forward HDS, Sun azimuth & elevation**
- **Error thresholds**
- **Report bands present**

Performance Requirements

- **See handout**

RDCS

Functional Requirements

- **Delete raw data files**
- **Generate data receive summary report**
- **Generate tape labels**
- **Maintain accounting in database**
- **Modify capture process execution characteristics**
- **Playback data**
- **Restage data**
- **Save data to tape**
- **Suspend L0R during capture**

Performance Requirements

- **See handout**

RDPS

Functional Requirements

- **None planned**

Performance Requirements

- **See handout**

Post-DDS Functions

- **Add JPEG compression to browse image.**
- **Apply contrast stretch to browse image.**
- **Apply radiometric correction to browse image.**
- **Automatically copy raw data to tape**
- **Automatically perform L0R**
- **Begin scenes with a forward scan.**
- **Capability to bypass BCH**
- **Check L0R parameters for consistency across strings.**
- **Collect & store extended statistics for data quality assurance and trend analysis.**
- **Coordinate I & Q channel processing.**
- **Electronic schedule ingest**
- **Handle multiple contacts per tape**
- **Handle multiple DLTs per string**
- **Handle tape stacker**
- **Include L7 Calibration Parameter File version number in metadata.**
- **Insert lines into LPS Journal file by operator.**
- **Moving window display**
- **Partial scene browse**
- **Partial scene metadata**
- **Propagate L0R parameters from one string to others.**
- **Provide database backup script incorporated into GUI**
- **Provide periodic return link Q/A report.**

Post-DDS Functions (continued)

- **Provide single formula quality rating in metadata**
- **Receive data from supplemental ground stations.**
- **Report bands present for each scene.**
- **Restrict parameter update permissions to privileged account(s).**
- **Save uncompressed browse images on 8mm tape.**
- **Stop data capture at scheduled LOS unconditionally.**
- **Store reason for stopping L0R processing run.**
- **Store status/error messages in database and pass identifying numbers to lps_LogMessage**
- **Subinterval corner coordinates in metadata**
- **Support manual CCA**
- **Use two byte fill pattern**

RIDs

See File B3RR RID Summary

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
	System Reqs Review											
10-06-94-R01	Succesful image data receipt not confirmed by MOC until ~24 hours after downlink	Provide data receive summary to MOC via FAX or Modem within 5 minutes	ACCEPT									
		Provide data receive summary electronically	REJECT									
10-06-94-R02	SRR presentation indicated that CCA assessment by quadrant was TBR	Provide ACCA on quadrant & full scene basis	ACCEPT									
10-06-94-R03	QA statistics for the MOC	Provide UIF screens to EDC for review during development	ACCEPT					•				
		Report return link Q/A in real-time (not accepted)	REJECT									
10-06-94-R04	LPS F&PS Req. 3.3.4.12.2.1.a, p 3-9	Correct inconsistency between requirements	ACCEPT									
10-06-94-R05	LPS F&PS Req. 3.3.4.12.x, 17 & 18	Correct inconsistency between requirements	ACCEPT									
10-06-94-R06	LPS F&PS (General within document) - include test data and test data analysis tools requirements	Deliver engineering versions of all software analysis test tools as part of system	ACCEPT									
10-06-94-R07	LPS F&PS Req 3.3.2.1	Reword Requirement	ACCEPT									
10-06-94-R08	LPS F&PS Req 3.3.2.12	Reword Requirement	ACCEPT									
10-06-94-R09	LPS F&PS Req 3.3.2.28	Reword Requirement	ACCEPT									
10-06-94-R10	LPS F&PS Req 3.3.1.8 & section 4	Add 60 day storage requirement	ACCEPT									
10-06-94-R11	LPS RMA	Increased RMA on hold pending funding	REJECT									
10-06-94-R12	Scene Granularity	Provide data granules on a scene basis	REJECT									
10-06-94-R13	Automated Cloud Cover Assessment	Provide manual CCA	HOLD	?		•		•				
10-06-94-R14	I & Q Channel processing coordination	LPS should always process two strings (I & Q) simultaneously	ISSUE	?				•				
10-06-94-R15	Link to IAS	Allow IAS to get ~5 scenes/day direct from LPS	REJECT									
10-06-94-R16	Moving Window Display	Provide MWD	ACCEPT	•		•		•				
10-06-94-R17	Un-address reqs - add Q/A to MOC	Redundant wrt 10-06-94-R01	REJECT									

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
10-06-94-R18	UN-addressed reqs - add BER requirement	Add requirement	ACCEPT									
10-06-94-R19	UN-addressed reqs - add Q/A to MOC	Redundant wrt 10-06-94-R03	REJECT									
10-06-94-R20	Applicable documents	Make item 6 (?) an ICD	ACCEPT									
10-06-94-R21	Section 2.3.6 corrections	Correct F&PS/Ops Con discrepancy	ACCEPT									
10-06-94-R22	Section 2.4 Clarification needs	Use backup string to minimize data loss due to failures	ACCEPT									
10-06-94-R23	Ops Concept not supported by F&PS	Change Ops Concept to rectify MOC coordination	ACCEPT									
10-06-94-R24	Section 3.2 Corrections	Change wording of references to ICDs in interface requirements	ACCEPT									
10-06-94-R25	Requirements for LPS Operator Interface	Build in as much automation as possible within the budget	ACCEPT									
10-06-94-R26	Reqs. for LPS Operator Intervention	Req. for interactive intervention capability	ACCEPT									
10-06-94-R27	LPS Output Files	Provide a merge capability on hold pending funding	REJECT									
10-06-94-R28	Multiple Browse Images	Determine whether monochrome browse should be deleted	REJECT									
10-06-94-R29	Handling of spacecraft clock drift	Calculate & append drift (don't apply)	ACCEPT									
10-06-94-R30	Transfer Volume	Add "after DAN" to req to transfer within 8 hrs	ACCEPT									
10-06-94-R31	Comments received on F&PS	Assorted rewordings to F&PS	ACCEPT									
	Ground System PDR											
36	Security concern for dual network attachment to LPS processors	No software impact	ACCEPT									
	System Design Review/Software Requirements Review											
03-09-95-R01	LPS front end failure/failover capability	Reuse I&T recorders for data capture hot backup	ACCEPT									
03-09-95-R02	Metadata Contents	Add a day/night flag to scene metadata - TBD method	ACCEPT									
03-09-95-R03	Radiometric balancing of Browse & ACCA...	Apply gain & bias to browse & ACCA	HOLD	•		•		•				
03-09-95-R04	Scene Framing Accuracy	Change accuracy requirement to 15 meters	ACCEPT									

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
03-09-95-R05	Missing pages	Add missing chart	ACCEPT									
03-09-95-R06	Data quality assurance & trend analysis	Extend DQ analysis capabilities	HOLD	•		•		•	?	?		?
03-09-95-R07	LPS Distributed Architecture String Contingency Ops	Add a 6th string for 3rd X band	REJECT									
03-09-95-R08	LPS Architecure/Alternatives Availability	Describe system availability criteria	ACCEPT									
03-09-95-R09	LPS Architecure/Alternative Availability/Figures/Reliability	Provide reliability figures using same measure for both options	ACCEPT									
03-09-95-R10	LPS Compute Processor Study Reliability/Availability	Provide availability/reliability measurements for optilons	ACCEPT									
03-09-95-R11	LPS Front End Study Reliability/Availability	Provide availability/reliability measurements	ACCEPT									
03-09-95-R12	SRR follow-up on cost impact RIDs	List SRR RIDs with cost impact with status	ACCEPT									
03-09-95-R13	Automatic Data Capture Process	Automate the data capture process	ACCEPT									
03-09-95-R14	Identification of Scenes Containing PAC data	Use Day/Night flag as PAC indication	ACCEPT									
03-09-95-R15	LPS SDS Requirements Alloc. Deficiencies	Del F&PS 3.3.1.8 to s/w; add 3.3.1.10.1 to RDCS	ACCEPT									
03-09-95-R16	Recommended Changes and Issues TBR	Various corrections to SRS	ACCEPT									
03-09-95-R17	Missing CADUs	Define a missing CADU	REJECT									
03-09-95-R18	Bit Slip Correction	Reword F&PS 3.3.2.6	REJECT									
03-09-95-R19	Frame Sync Search Tolerance	Rework F&PS to require search + check ≥ 2	REJECT									
03-09-95-R20	Frame Sync Lock Tolerance	Delete F&PS 3.3.2.4.c	REJECT									
03-09-95-R21	LGS Matrix Switch I/O	Implement differential transmission mode	ACCEPT									
03-09-95-R22	LGS Bit Synchronizer Lock	Solve problem of possible data loss before lock	REJECT									
	Critical Design Review											
11-29-95-001	Moving Window Display	Supply S/W maintenance costs used in trade study	ACCEPT									
11-29-95-002	Retransmission of Data	Explain how retransmission will be handled	ACCEPT									
11-29-95-003	Raw Data Processing Main Driver (rdp_main)	Explain why CRC, BCH, & RS EDAC	ACCEPT									

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
		Bypass BCH option in LPS	ACCEPT									
11-29-95-004	Back-up Recording for Other Missions	Add 19mm digital tape	REJECT									
11-29-95-005	DLT Record/Playback Rates	Add 19mm digitial tape	REJECT									
11-29-95-006	LPS I&T Plan Applicable Documents	Add PVP and L7 GS I&T Plan to App Docs List	ACCEPT									
11-29-95-007	LPS Project Management Plan: Acc. Testing	Demonstrate compliance in end-to-end prelaunch test	REJECT									
11-29-95-008	The verification that the LPS is ready to capture data is not incluced in the operational cycle or the operations scenarios	Include testing and processing time lost in scenario and cycle chart	ACCEPT									
11-29-95-009	...short term archive...will take 6 hours/day	Modelling already done. Add simulatneous archive & L0R to scenarios	ACCEPT									
11-29-95-010	...software receiver...a high-risk development	Performance verification already done. no change	ACCEPT									
11-29-95-011	Incorrect DSI Estimation in BIP	Correct DSI estimates in BIP	ACCEPT									
11-29-95-012	Calculation of Spacecraft Orbit Number	Delete handling of orbit number parameters, computation and storage in metadata	ACCEPT					•		•		
11-29-95-013	Partial_Aperture_Cal Flag in Metadata	Change name to Day/Night flag; implement algorithm flag = (elevation angle > 0o) ? DAY : NIGHT;	ACCEPT					•				
11-29-95-014	Operational Scenarios	Misunderstanding that "throttling" may occur during nominal operations	ACCEPT									
11-29-95-015	Gain State	Confirm that gain status are from PCD/Status Data	ACCEPT									
11-29-95-016	Equipment Layout	Recommended layout. Updated floor plan to be presented	ACCEPT									
11-29-95-017	Journal Message Filtering	Allow selection of any subset of message severities for display	ACCEPT					•				
11-29-95-018	WRS Scene Center Computation	Change the algorithm	REJECT									
11-29-95-019	Partial_Aperture_Cal (PAC) Flag	Redundant wrt 11-29-95-013	REJECT									
11-29-95-020	Majority Voting for PCD Valid Data	User bitwise vote when none of the PCD words agree.	ACCEPT							•		

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
11-29-95-021	WRS Corner Coordinates	Compute actual scene corner values	ACCEPT							•		
11-29-95-022	PCD Processing	Output PCD in EU	ACCEPT							•		
11-29-95-023	File Formats	Add HDF	ACCEPT			•		•	•	•		
11-29-95-024	Data Fill	Use 2 byte fill pattern. Question: for ETM+ only or PCD too?	ACCEPT	•				•	•			
11-29-95-025	Automated startup of L0 process	Start up L0R process after capture with controls to allow sequential processing of contacts	ACCEPT					•				
11-29-95-025	Automated startup of L0 process	Auto disk space check	ACCEPT					•				
11-29-95-026	Browse Image Size	Requested study is beyond LPS scope - no change	ACCEPT									
11-29-95-027	LPS User Interface	Common LPS & LGS UIFs look&feel is beyond LPS scope	REJECT									
11-29-95-028	WRS Corner Coordinates	Redundant wrt 11-29-95-021	REJECT									
11-29-95-029	DLT Drives on LPS Strings	Multiple DLTs	HOLD	•		•		•			•	
11-29-95-029	DLT Drives on LPS Strings	Juke Box	HOLD	•				•			•	
11-29-95-030	User-specified thresholding of console/errorlog messaging. (Global function - LPS_LogMessage, pp. SW19)	Add "(TH = N)" to thresholded error messages [12 Messages]	ACCEPT						•			•
11-29-95-031	Network Connections to the EDC Campus LAN	Add a router/bridge	HOLD									
11-29-95-032	Level of Oracle Knowledge and access required by LPS Operator	Back-up script incorporated into GUI	ACCEPT					•				
11-29-95-033	Partial Scene Browse Image	Compute browse for partial scenes	ACCEPT			•		•	?	•		
11-29-95-034	Automation of LPS reception test	Provide scripts to configure/restore LPS for/from testing	ACCEPT					•				
11-29-95-034	Automation of LPS reception test	Integrate scripts into GUI	ACCEPT					•				
11-29-95-034	Delivery mechanism for reports to external elements	Add electronic MOC interface	REJECT									
11-29-95-036	Synchronization of LPS Production String Databases	Propagate parms & check consistency (assumes Oracle distributed option)	ACCEPT					•				
11-29-95-037	Check disk space prior to data capture	Add check of system disk prior to capture	ACCEPT								•	

RID #	Title	Description	Status	DB	Glob	IDPS	LDTS	MACS	MFPS	PCDS	RDCS	RDPS
11-29-95-038	Automatic Cloud Cover Assessment (ACCA)	Present ACCA algorithm at BDR	ACCEPT							•		
11-29-95-039	Multiband Browse Image	Discuss details of browse algorithm at BDR	ACCEPT									
11-29-95-040	Discrepancy in Level 0R Parameters	Misunderstanding of table names - no action necessary	ACCEPT									
11-29-95-041	Excessive Manual Operator Intervention in LPS Operation	Electronic Schedule ingest (assumes Oracle distributed option)	ACCEPT					•				
11-29-95-041		Auto L0R - redundant wrt #25	REJECT					•				
11-29-95-041		Auto Archive	ACCEPT					•				
11-29-95-041		Tape Stacker - redundant wrt #29	REJECT	•				•			•	
11-29-95-041		Auto Data Receive Summary to MOC - redundant wrt #35	REJECT									
11-29-95-042	Operator Interface	Restrict parameter update permission to privileged account(s)	ACCEPT	•				•				
11-29-95-043	Project Schedule	Show additional milestones on schedule	ACCEPT									
11-29-95-044	LPS Spares	Provide a spare parts list	ACCEPT									
11-29-95-045	Quality of newly acquired raw wideband data	Request for real-time Q/A rejected	REJECT									
11-29-95-046	IAS-LPS ICD	Move time coefficients into parameter file; work on resolving other isues	ACCEPT									
11-29-95-047	LDT output performance determination	Output performance prototype/benchmark	ACCEPT									
11-29-95-048	Reprocessing contains both formats	Ensure both formats are processed - no change required	ACCEPT									
11-29-95-049	Browse Contrast Stretch	Do contrast stretch on browse image	ACCEPT	?		•		?				

Preliminary Design Issues

See File DD_ISS_Open

October 28, 1996

Open Issues / Notes

Updated for LPS Build 3 Requirements Review - 10/15/96

System Level

SYS-1) LPS test functions need to be defined.

AI: Define test functions. - Tan 8/1

SYS-4) Scripting for operations. Should we provide different command line arguments to the subsystem processes so that operations personnel can begin processes without having to know the Contact Sequence ID? This implies that the subsystem may have to obtain the CSID from the database given a different set of arguments.
Dennis: There is a conflict between planned scripting to ease 4 string burden and the LPS menu-based UIF. One possibility: all LPS functions can be invoked from command line. UIF just provides the menu interface to invoke the same executables.

S: We will continue to use the CSID as an argument for the L0R processes, but we will hypothesize a script that will obtain the CSID given a set of different information. This script could be used on the command line, for the appropriate process, delimited with executable quotes. This will allow us to keep our existing design.

S: The UIF will be independent of all processing. We still need to verify this can be done for reports if desired by operations.

AI: How does operations want to identify contacts? - Dave TBD

AI: Examine feasibility of scripting reports: Shui-Ay

SYS-12) Can we create a script to extract data from Cadre, modify the data, and place back into Cadre?

AI: Check with System Administration. - Jeff 7/21

SYS-13) We need to investigate the trouble file sizing when we have many data problems. Establish our policy when trouble file grows too large. This affects RDPS, MFPS, PCDS, and LDTS.

AI: Determine what operations finds acceptable. - Tan 7/21

AI: Establish method for handling design and maintenance of trouble files, i.e. environment variables/global routine to generate file name and location. - Jeff/Dennis TBD

SYS-19) Should LP DAAC file transfer session initiations be prevented during data capture? Note that current file transfers probably cannot be suspended without a fatal error on the LP DAAC side.

AI: Prototype FTP file transfer during raw data capture to establish whether or not there is an impact. Make sure tests are done using E-BUS FDDI cards, not VME-BUS. - Cliff B. 9/1

SYS-20) What daily, monthly, and yearly production totals are required by LPS operations (there is currently no support for long term production totals, since we anticipate the database will be purged of Q/A that is more than 60 (or 30) days old).

AI: Discuss item with Operations? - Dave TBD

SYS-21) Need to revisit SRS and Context Diagrams for correctness.

AI: Organize a meeting in August to go over verification of the SRS. - Jeff TBD

SYS-23) Polarity and bit slip QA is still TBD!

AI: Resolve the TBD. - Jeff/Jack 8/1

SYS-26) Add design/Cadre Teamwork diagram reading conventions in the PDS. We should be able to copy the "Getting Started" on-line help sections from Cadre directly.

AI: Add a section in the DDS. Distribute with first draft generated in this phase. - Dennis 9/12

SYS-28) Need to review and agree on the LPS output file naming convention (see preliminary formats on the server). The LPS and ECS teams will be reviewing it this week.

AI: Resolve with the LPS->LP DAAC ICD. - Dave 8/1

SYS-29) The ICD between LP-DAAC and LPS needs to be reviewed and finalized. It has been proposed that the LPS/LP-DAAC interface operate on a separate FDDI connected to a router. Another ICD concern is the specification of the DAN formats. This includes file naming convention.

AI: Resolve with the LPS->LP DAAC ICD. - Dave 8/1

SYS-30) The interface with the IAS needs to be stated explicitly. The data is presumed to be sent electronically. Some software may need to be written to receive this data. PCDS is allocated this requirement.

AI: Resolve with the LPS->IAS ICD. - Dennis 8/1

RDCS

RDC-8) State that we assume partitioning to allow large (9 GByte) files. More specifically, we assume a single 32 GByte partition on the capture disk.

AI: Add an assumption into the DDS. - Rachel 9/14

RDC-11) The prototype for RDCS includes an option for transmission of simulated data which may be used for testing purposes. This has not been included in this preliminary design but may be added in the future.

AI: Incorporate into System Design. - Tan 8/1

AI: Write a CCR against the SDS to incorporate the data transfer. - Jeff 8/10

RDC-12) Capture may be unstoppable if no data is ever received.

AI: Determine method for stopping data capture in this event. - Rachel 8/4

RDC-13) Determine if it is feasible to maintain the reprocessing count in the RDC summary file in order to provide the information to the other strings.

AI: Investigate the feasibility of this approach. - Rachel/Dennis TBD.

RDPS

RDP-4) Need to fix naming conventions in some of the low level BCH structure charts and files.

AI: Describe changes to Jack Rosenberg. - Jeff 7/21

RDP-6) Define BER computation. Can we adequately do this computation?

AI: Define the BER computation. - Tan 7/21

AI: Organize RDPS meeting to discuss impacts of above. - Jeff 8/1

AI: Catch up with System Engineering concerning overdue action items. - Dennis 8/4

MFPS

MFP-2) MFPS needs to determine what to do (tossing is OK) when there is a CADU that has a RS uncorrectable header, and the VCID is invalid. For that matter, when there is known problems with the header or critical data portions of the CADU, what is the correct behavior?

AI: Provide analysis to establish whether tossing CADUs in question is the desired behavior. Include costing benefits. Analysis should also include benefits to adding a CRC after BCH. - Dennis 8/18

MFP-3) We need clarification from System Engineering on Band 6 Hi-Lo gain format.

AI: Clarify Band 6 format. - Tan 8/1

MFP-4) Can Band 6 be preempted?

AI: Resolve. - Tan 8/1

MFP-8) The DFCB shows a minor frame consisting of mid scan information that needs to be extracted from the major frame. There is no functional requirement associated with this.

AI: Determine whether or not we need a requirement for this, and establish whether or not the DFCB is wrong concerning this. - Tan 7/21

MFP-11) The BER count needs to be modified. MFPS needs to receive more information in order to calculate this value properly.

AI: Define the BER computation. See solution for RDP-6. - Tan 7/21

MFP-14) A look-ahead algorithm needs to be added in order to handle scan bit flip errors.

AI: Incorporate a look-ahead algorithm into design. - Rosanne TBD

MFP-15) An algorithm needs to be added to handle the extraction of data from missing CADUs.

AI: Incorporate an algorithm into the detailed design of MFPS. - Rosanne 10/6

AI: Establish what constitutes a missing CADU. - Dennis/Rosanne TBD

MFP-20) Do the VCDU counters conform to CCSDS standards an that the VCDU counter is unique to a particular virtual channel?

AI: Provide information to designers. - Tan 8/4

PCDS

PCD-2) We need to make sure that everyone is in agreement with the way we are handling subinterval breaking in PCDS.

AI: Describe at the Project Review and incorporate into the DDS. - Angie TBD

PCD-5) Check argument names in pcd_MainBuildCycle and pcd_MainCreatePCDFile.

AI: Discuss changes with PCDS. - Jeff 7/21

PCD-7) We need to incorporate the PCD minor frame counter into our design. Word 65 in the new DFCB.

AI: Incorporate into design. - Angie TBD

PCD-8) Check on-sheet connector notation on pcd_MainBuildCycle.

AI: Investigate and discuss changes with PCDS. - Jeff 7/21

PCD-11) Tim Keller: We should be using the drift time in our scene calculations. Note: If we correct PCD, we need to correct ETM+.

AI: Determine whether we should be using drift time in our scene calculations. - Tan 8/1

PCD-12) We need to incorporate into our design the storing of partial PCD cycles at the front and back of the contact period, as long as we have a whole PCD major frame.

AI: Incorporate this into the design of PCDS. - Angie TBD

PCD-13) Tim Keller: We are looking at interpolating around a few points in our scene calculations. In the past, he was assuming we were modeling over the whole subinterval. We need to verify that we can meet our accuracy requirements with our current scheme.

AI: Verify that we can meet our requirements using the existing calculations. - Tan 8/1

PCD-19) The complete list of parameters for scene identification from the IAS may be incomplete.

AI: Resolve with the LPS->IAS ICD. - Dennis 8/1

PCD-22) There is still a question of how to detect and correct when there is a data stream break and incorrect bytes have been inserted up to the next sync marker (minor frame counter, sync pattern, etc.).

AI: Determine how to handle previous bytes inserted into minor frame before out-of-sync detected. - Dennis 8/4

PCD-24) How are the attitude and ephemeris associated with the PCD time tag.

AI: Pose question of relationship to Terri Arvidson. - Jeff 8/18

PCD-25) "Number of ETM+ Scans" in the PCD File will require design changes if it is a required item.

IDPS

IDP-1) Rich Irish: Recommending that we incorporate the radiometric correction into our design prior to ACCA and Browse. He is near 100% sure that he will need it.

AI: Deferred until we have the algorithm and then we can put everything in at once. - Joy TBD

IDP-3) Monochrome browse requirement has been removed. We need to delete this from our design.

AI: Remove from design. - Diana 10/12

IDP-4) Check idp_Band for naming convention and module format of lps_db_GetSubIntvInfo.

AI: Discuss changes with IDPS. - Jeff 7/21

IDP-5) There are no arguments shown on structure chart idp_BandFillFile going into idp_BandFileWrite. The m-spec lists some args.

AI: Discuss changes with IDPS. - Jeff 7/21

IDP-6) We need to fix the names of the two routines idp_db_bandUpdate and idp_db_browseUpdate. They also should be referencing the table name, not the database name.

AI: Discuss changes with IDPS. - Jeff 7/21

IDP-7) Tim Keller: Recommends that we consider "hiccuping" on our browse and ACCA to make sure we touch each detector in a scene. At least be somewhat random.

AI: Define the algorithm to be used. - Tan 8/1

IDP-10) For multiband browse files, the raw image data for three predetermined bands is reduced. It has not yet been decided if the three bands should be interleaved in one file, placed consecutively in one file, or if the three bands should be placed in three separate browse files.

AI: Define output product for the image data. - Tan 8/1

IDP-11) The current ACCA algorithm is unsatisfactory. At this point a new algorithm is expected in Fall, 1995.

MACS / User Interface

MAC-2) We should investigate multiple user types for Oracle/User Interface. We may have a DBA or maintenance user type.
Dennis: We may require special privileges for installation (point made by J. Unekis, 06/27/95 session of PDWthru).

AI: Assigned to Operations Scenario person - Person/Date ?

MAC-4) We have Structure Chart discrepancies in MACS with the rest of the subsystems.

AI: Relay to subsystem. - Dave TBD

MAC-5) MACS needs to detail cleanup procedures.

AI: Write a proposal concerning graceful vs catastrophic termination. - Dave TBD

MAC-6) Metadata generation needs cleanup in terms of naming conventions and other standards. Needs to show files that are being generated, and needs to change from the logical schema to the normalized schema.

AI: Relay to Maurice Dowdy. - Dave TBD

MAC-7) LPS reports require further analysis and enhancement. Existing reports should be enhanced to provide more than the minimum information in the F&PS. Selection capabilities need to be verified (e.g. does a return link Q/A report always report a single contact or can multiple contacts be reported; does L0R Q/A report a single sub-interval, all the sub-intervals in a contact, all the sub-intervals in all processing of a contact, or what?).

AI: Deferred. - Dave TBD

MAC-11) Verify ordering of menu options for UIF, i.e. most used at top.

AI: UI developers should analyze this and propose a solution. - Shui-Ay 7/31

MAC-12) Dave: Need to review why we are checking for data first prior to the generation of metadata. This can be handled when we get the data.

AI: Discuss with Maurice - Dave Defer to August

MAC-14) Calibration Activity Door status should be incorporated into the Metadata creation.

AI: Identify Cal Door status and keep PCD/MACS informed. - Tan - 7/18

AI: Write Question for DFCB - Dennis - 7/13

MAC-17) It is not decided what kind of log file will be used to monitor the LPS operations. A prototype needs to be developed to justify the use of system log file as the LPS log file. Following are the open issues:

a) When to purge the log file?

AI: Operations. - Dave TBD

b) What to do when the file runs out of space?

AI: Operations. - Dave TBD

MAC-20) Automatic data capture will be started up by MACS. The implementation of this automatic startup has not been defined.

AI: Developers need to figure this out. - Person/Date?

Database

DB-4) Need to investigate tools needed to purge data in the database older than our required storage time.

AI: Kim TBD

DB-5) Explicit prevention measures for data loss are still unexplained. The database needs to establish procedures to ensure we meet our data integrity requiremens.

AI: Incorporate details of data los prevention into the DDS. - Database TBD

LDTS

LDT-1) LDTS/MACS enable/disable the sending of a DAN. If we disable the DAN transmission, then reprocess the data on a different string which sends the associated DANs, what happens when we enable the DAN transmission on the original string? Do we want DANs to be sent again?

AI: Analysis & recommendation - Dennis TBD

LDT-4) Need to examine the conventions throughout LDTS.

AI: Relay to David Alban. - Person/Date?

LDT-5) Too many modules in ldt_SendDAN structure chart.

AI: Relay to David Alban. - Person/Date?

LDT-6) Too many modules in ldt_RcvDTA structure chart.

AI: Relay to David Alban. - Person/Date?

LDT-7) We should check with Pacor on how they handle bad DTAs. Do they store them in a trouble file for later examination? If they do, do they even look at them operationally? Do we need to keep a trouble file?

S: Keep DANS & DTAs.

AI: Define Operations procedure. - Dennis TBD

LDT-8) We should be able to use some portion of DESIM for testing our DAN/DTA interface.

AI: Investigate usage of DESIM for testing. - Dave TBD

Detailed Design Issues

General

- The LDTS design reflects the contents of the LPS/ECS ICD, release A. Release B of the ICD has not been finalized. Differences between the two versions will require modifications to the current design.
- LPS output file contents, as defined in the LPS DFCB, need to be reviewed and finalized. LPS output file formats remain to be defined.
- The interface with the IAS needs to be stated explicitly. It is assumed that data is sent electronically with operator intervention required to cause the ingest of the new parameters. Details of IAS parameter format remain undefined.
- A possible requirement for automatic contact schedule receipt and ingest will impact the LPS design; such a requirement is not supported by this design.
- Long term production status reports have yet to be defined. The current design includes no long term reporting capabilities.

The following issues concern the LPS subsystems:

- An algorithm for providing a day/night flag in the LPS metadata needs to be refined; the current design does not include the day/night flag.
- An algorithm for automatic cloud cover assessment has not been received.
- A new requirement for a moving window display is not reflected in the current design.
- For automated tape label generation functions, both the contents and format of the tape label and the tape label printer API are undefined. The current design assumes that the tape label contents include the capture string ID, the LGS channel ID, and the contact start and stop date/times. The current design assumes a standard print queue interface to the device.
- Inconsistencies in the Landsat 7 DFCB exist.

Detailed Design Issues (continued)

MFPS

- No decision has been made about the set of CADUs that do not form a major frame. MFPS design includes provisions for a trouble file.
- The band 6 data format is undefined.
- The DFCB has contradictions that leave the MFPS design undecided concerning the format of the major frame.

PCDS

- PCD file format is not finalized.
- Temporary file and Level-Zero file cleanup on failure.
- The mechanism on receiving time coefficients file and SLP file from the FDF.

IDPS

- For multiband browse files, the raw image data for three predetermined bands is reduced. It has not yet been decided if the three bands should be interleaved in one file, placed consecutively in one file, or if the three bands should be placed in three separate browse files.
- The correct behavior of signal handlers is still unknown. Signal handlers behave inconsistently across LPS; some have return values while others do not. Also, it is unknown what functionality a signal handler is capable of.
- The contents of the Bands_Present field of IDP_Acct is still unknown. In the current design it is simply set according to the format of the data (1 through 6 for format 1; 6, 7 and Pan for format 2).

Detailed Design Issues (continued)

MACS

- Under the Test menu only one submenu, Send Data, is defined for now.
- A prototype was developed to justify the use of system log file as the LPS log file. The operator can change the monitoring severity level during processing via the user interface. The followings are the open issues:
  - When to purge the log file ?
  - What to do when the file runs out of space?
  - Should we provide the capability to print the log file?

LDTS

- The LDTS detailed design is based on the "Final" Interface Control Document (ICD) between EOSDIS Core System (ECS) and the Landsat 7 System (LPS) dated July 1995. A new "Review Copy" of this ICD dated Sept. 28, 1995 has been generated which may impact the design.
- The design currently assumes that ldt_RcvDDN, the LDTS program which watches for and receives DDN's, will be started by the MACS at the time of LPS system start up and will continue to run until it receives an indication from the MACS that it should terminate. However, exactly how ldt_RcvDDN will be started is still an issue.

Other Open Issues

Additional error codes for DAN and DDN are included in the LPS/ECS ICD. No impact on LPS was assessed because the LPS displays these errors to the operator only. No processing is performed.

Band Gains. A new table (BAND_GAIN_STATES) has been created. In order to update this table, IDPS will need to have MFPS include the band gains along with the major frame data.

Can the LPS handle duplicate DDNs?

A capability to insert lines into Journal was requested by EDC.

Capture device API needs to be implemented as agreed upon. Implementation needs to return to originally designed method of stopping data capture.

Check L7 Calibration File and Parameter name changes in the ICD (Section 3.2.1)

Determination of upper corners values for the partial scene located at the start of a subinterval and lower corner values for the partial scene located at the end of a subinterval.

Do partial scene browse images contain fill or not? The DFCB is ambiguous (see 4.3.1 para. 3).

Do partial scene corner coordinates locate the corners of the (non-existent) full scene or the first and last scans in the portion of the scene actually present?

How are bands in a browse file mapped to RGB?

How are days beyond the actual end of year to be output? As the received day (e.g. 1998 day 366) or corrected (1998 day 1)?

How can an operator tell which DANs have been sent?

IDPS needs requirements and an algorithm for browse contrast stretch.

IGS ICD, dated September 20, 1996, is under review. Comments are due on October 15. Resolution of some issues, if any, may take at least until October 30 and may impact LPS metadata.

Is there a requirement for a single formula quality rating?

Level 0R parameter modifications can occur during L0R, creating potential race conditions.

LPS shall provide the capability to playback and receive test data as called out in the ICD (4.2.1.7). Similarly, the LGS Bit Error Rate Tester (BERT) data receive and playback to LGS capability as called out in the ICD (4.2.1.6) should be provided. Need to verify that design handles these and expand design, if not.

LPS shall receive electronic schedules, as specified in the MOC ICD, from the LGS.

LPS shall receive LGS playback of the raw wide band data tape received from L7 supplemental ground stations. (CCR LPS960117).

Metadata GROUP/END_GROUP structure needs to be changed to match IGS metadata structure to allow Format 1 and Format 2 (multiple) subintervals per metadata file (CCR LPS960120)

Moving Window Display requirements are still being reviewed by EDC. Bob and or Jeff may have received comments by now. See the MWD white paper, dated September 19, 1996, for draft requirements and CCR LPS960107.

Output file subdirectory structure is user hostile. All subintervals for all contacts appear in the top level directory.

Partial Scene Center Times. What time is PCDS going to send to IDPS if a partial scene does not contain the WRS scene center?

Partial Scenes. The Band Files contain geolocation dimensions which map scene corner and center lat/long coordinates to specific scan lines. In the case of partial scenes, there are not scan lines to map to both the start and the end of the WRS scene. What should IDPS do in this case?

Reports (data receive summary, LPS Q/A, file transfer summary) need to be defined. Data receive summary and LPS Q/A should be expanded to include additional fields. All reports need precise layouts; layouts should be reviewed by EDC. Bit Error Rate (BER) computation needs to be defined for reports.

Requirements traceability is incomplete, obsolete, and incorrect.

Reviewing IGS ICD, dated September 20, 1996. Comments are due on October 15. Resolution of some issues, if any, may take at least until October 30 and may impact LPS metadata.

Revise the status/error message design to store all messages in database.

Small subintervals are not removed from the contact's output.

The DDN server will lose DDNs, if the system crashes during a DDN's processing or if the operator shuts down the LPS software while a DDN is being processed. There is no way to tell whether the DDN server is processing a DDN.

Verify that the browse subsampling algorithm uses odd numbered detectors for odd numbered scenes and even for even numbered scenes as specified by LPS output file DFCB sect. 4.3.1.

The fill values for MSCD and PCD files are TBD in the current LPS output files DFCB.

The following TBDs/TBRs are no longer considered open issues: a. Section 3.4 - First minor frame location for the EOL code. b. Section 4 - Spacecraft timecode conversion from GMT to seconds format. c. Table 4-9 - Bumper wear allowance of 17 minor frames; LPS to use a parameter. d. Section 4.3.1 - JPEG compression is provided per CCR LPS960097.

The gyro data type is changed to float64.

The LPS output files DFCB implies a ETM+ major frame synchronization approaches that are not part of the MFPS implementation (e.g. flywheeling in ETM+ major frames).

There is no user interface to LDTS communications control parameters (number of retries, number of authentication failures, etc.).

Trouble file generation should be switchable on-off (see response to AI for MFP-13).

Use of auto logon for database may not support rapid failover scenario.

Use the June 14, 1996 DFCB corrected on August 7, 1997 (file date). Some output data format changes (e.g., EOL line error may require EOL flywheeling under certain conditions).

conditions).

Verify reprocessing request format against tape/label format.

We have received a request to ensure that a scene begins with a forward scan. Is this a requirement?

We have received a request to store a reason whenever L0R is stopped. Is this a requirement?

CCRs

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ICCRs

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